

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: :
ECKHARD ALT :
Serial No. (not yet assigned) : Group Art Unit _____
Filed: Herewith (12/12/00) : Examiner: _____

Title: IMPLANTABLE VASCULAR AND ENDOLUMINAL STENTS

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Box Patent Application
Washington, D.C. 20231

Please amend this application as follows, prior to calculating the filing fee:

In the Title:

Change the title (throughout, including at page 1, line 1) to read: -- TUBULAR
STENT WITH OVAL STRUTS -- .

In the Abstract:

Replace page 54, Abstract of the Disclosure, with new page 54 enclosed with this
Preliminary Amendment.

In the Specification:

Amend the specification as follows:

Page 1, after the title and before the next line, insert the following section:

-- Cross-Reference to Related Applications

This application is a continuation of co-pending application Serial No. 09/186,573, filed November 5, 1998, now U.S. Patent No. 6,159,237, which is a continuation of U.S. Patent No. 5,843,117 that issued from application Serial No. 08/599,880, filed February 14, 1996, each of which is assigned to the same assignee as the present application. --

Page 1, line 11, delete "to" (first occurrence).

Page 8, line 3, change "said" to -- the --; line 19, delete the period (.) after "annealed".

Page 14, line 8, change "is" to -- are --.

Page 25, lines 10 and 12, change "**20**" to -- **22** -- (both places).

Page 26, line 5, between "cluster" and "of", insert -- **27** --;

line 6, between "struts" and "are", insert -- **28** --.

Page 27, line 1, between "elements" and "**35**", insert -- or struts --;

line 5, delete "that".

Page 28, line 5, between "the" and "openings", insert -- flattened, closed, substantially oval-shaped --;

line 8, between "rib" and "**38**", insert -- or curvilinear strut -- .

Page 35, line 5, between the end parenthesis ()) and the comma (,), insert -- as illustrated by exaggerated bulbous or distended ends **66** and **69** of the balloon shown in phantom --.

Page 36, line 12, change “are” to -- or -- .

Page 37, line 1, change “balloon” to -- stent --; same line, delete “is”;

line 20, between “reference” and “analogous”, insert -- to --.

Page 38, line 2, change “**8**” to -- **9** --.

In the Claims:

Cancel claims 1-60 before calculating the filing fee for this application.

Add the following new claims:

1 **-- 93.** A vascular or endoluminal stent adapted for deployment in a vessel or tract
2 of a patient to maintain an open lumen therein, comprising a scaffold formed from a single
3 open-ended tube having a multiplicity of through-holes in the wall thereof defined by a plurality
4 of struts bounding said through-holes; each of said struts having an optimized cross-section of
5 oval shape to enhance flexibility of the stent, ease advancement of the stent through a lumen
6 of the vessel or tract for deployment at a target site therein, protect the balloon of a balloon
7 catheter when the stent is tightly crimped thereon, and enhance expansion of the stent during
8 deployment while maintaining its capability to withstand compression in response to recoil of
9 the wall of the vessel or tract following deployment.

1 **94.** The stent of claim **93**, wherein said through-holes are laser cut from said tube.

1 **95.** The stent of claim **94**, wherein said oval shape of the struts is formed by electro-
2 machining.

1 **96.** The stent of claim **93**, wherein said struts have a serpentine configuration.

1 **97.** A stent for deployment in a patient's vessel, tract or duct to maintain an open
2 lumen therein, comprising an open-ended elongate tube having a generally circumferential wall,
3 a multiplicity of interconnected curvilinear struts formed in the wall of said tube and thereby
4 defining a multiplicity of through-holes in said wall; each of said struts having an oval cross-
5 section with a long diameter generally aligned with the length or circumference of said wall and
6 a short diameter generally aligned with the thickness of said wall, whereby to enhance the
7 longitudinal flexibility of the stent, ease advancement of the stent through a lumen of the vessel,
8 tract or duct for deployment at a target site therein, protect the balloon of a balloon catheter
9 when the stent is tightly crimped thereon for advancement or expanded therefrom by inflation
10 of the balloon, and enhance expansion of the stent during deployment while maintaining its
11 capability to withstand compression in response to recoil of the wall of the vessel, tract or duct
12 following deployment of the stent as a scaffold in support thereof.

1 **98.** The stent of claim **97**, wherein said struts are formed by laser cutting of said
2 through-holes from the wall of said tube.

1 **99.** The stent of claim **98**, wherein said oval cross-section of the struts is formed by
2 electro-machining said tube following said laser cutting of the through-holes.

1 **100.** The stent of claim **97**, wherein said struts are serpentine. --

REMARKS

The specification has been amended to cite its parent applications, viz., original Ser. No. 08/599,880 ("the '880 application") and subsequent continuation Ser. No. 09/186,573 ("the '573 application"), and to claim the priority date of the '880 application. Other amendments to the specification substantially mirror those made in the '880 and '573 applications, with attention to avoiding addition of new matter.

Claims 1-60 as originally appended to the '880 application have been canceled from the present continuation application, claims 61-76 were canceled and claims 77-92 were allowed in the '573 application and, thus, are not present here, and new claims 93-100 have been added.

Submitted herewith is an Information Disclosure Statement, together with copies of the patents cited therein which may be material to the patentability of the invention claimed herein.

Referring to these patents:

Alfidi et al U.S. Patent No. (USPN) 3,868,956 discloses a heat-expansible appliance in the form of an internally stressed coil of wire for implantation in a body vessel, with cross-sections of the wire including an elliptical configuration.

Fontaine USPN 5,370,683 discloses a vascular single filament wire stent of low memory

biocompatible material having a series of U-shaped bends.

Klein USPN 5,593,442 discloses a radially expandable luminal prosthesis in which a pair of body segments is joined by a serpentine ring and two pairs of beam members.

Pinchasik et al USPN 5,449,373 discloses an articulated stent including a flexible connector connecting two substantially rigid segments.

Orth et al USPN 5,591,197 discloses an intraluminal stent in which projecting barbs are formed during expansion of the stent.

Lau et al USPN 5,514,154 discloses a stent composed of interconnected expandable cylindrical elements of ribbon-like undulating pattern.

Horn et al USPN 5,591,230 discloses a stent in the form of a wire of multi-loop design whose length remains the same before and after expansion.

Early action on the merits of this application is earnestly solicited.

Respectfully submitted,

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